

Listing of Claims:

1. (Currently Amended) A color image forming apparatus, comprising:

5 a first image forming device including a first scanning optical device to form a first image and a first developing device to develop the first image into a first color toner image; and

10 a second image forming device including a second scanning optical device to form a second image and a second developing device to develop the second image into a second color toner image;

wherein each of the first and second optical devices comprising comprises:

a light source which emits a light beam;

15 a deflector which deflects the light beam so as to scan an image forming surface in a main scanning direction with the light beam;

20 a plurality of lenses provided between the deflector and the image forming surface to focus the deflected light on the image forming surface, wherein each of the plurality of lenses has a length along the main scanning direction; and

a lens positioning device to position at least one lens of the plurality of lenses rotatably around an axis parallel

to the length of the at least one lens to adjust ~~the a~~
characteristic of a scan line image in an adjustment process, and

25 wherein ~~the a~~ characteristic of ~~the a~~ first scan line image
and ~~the a~~ characteristic of ~~the a~~ second scan line image
substantially become the same [[,] when at least one of the ~~lens~~
lenses is rotated around the axis parallel to the length of the
lens.

2. (Original) The apparatus of claim 1, wherein the
deflector includes a polygon mirror.

3. (Currently Amended) The apparatus of claim 1, further
comprising:

5 third and fourth image forming devices including respective
scanning optical devices and respective developing devices,
wherein each of the third and fourth scanning optical devices
also comprises ~~the a~~ light source, ~~the a~~ deflector, ~~the a~~
plurality of lenses, and ~~the a~~ lens positioning device.

4. (Currently Amended) The apparatus of claim 1, wherein one
lens of the plurality of lenses ~~is a f~~ comprises an f θ lens.

5. (Currently Amended) The apparatus of claim 1, wherein one
lens of the plurality of lenses ~~is~~ comprises a cylindrical lens.

6. (Currently Amended) The apparatus of claim 1, wherein the plurality of lenses ~~comprise a f~~ comprises an f θ lens and a cylindrical lens.

7. (Currently Amended) The apparatus of claim 6, wherein the positioning device allows the cylindrical lens ~~being to be~~ rotatable around an axis parallel to the length of the cylindrical lens so as to scan a straight line on the image forming surface.

8. (Currently Amended) The apparatus of claim 6, wherein the positioning device of each of the first scanning device and the second scanning device comprises two mechanisms to allow the ~~f f~~ θ lens and the cylindrical lens ~~being to be~~ rotatable around an axis parallel to the length of each lens respectively so that the deflected light scans a straight line on the image forming surface.

9. (Currently Amended) The apparatus of claim 1, wherein the at least one rotatable lens is positioned closest to the image forming surface among the plurality of lenses.

10. (Currently Amended) The apparatus of claim 1, wherein the characteristic of the first scan line image and the characteristic of the second scan line image is a straight line.

11. (Currently Amended) The apparatus of claim 1, further comprising:

an adjustment device ~~adjusting to adjust~~ at least one of the first and second scanning optical devices so that the scanned images formed by the first and second image forming devices are superposed on a recording sheet.

12. (Currently Amended) The apparatus of claim 3, further comprising:

an adjustment device ~~adjusting to adjust~~ at least one of the first, second, third and fourth scanning optical devices so that the scanned images formed by the first, second, third and fourth scanning optical device [and the image of the second one] devices are superposed on a recording sheet.

13. (Currently Amended) The apparatus of claim 1, wherein the image forming surface ~~is~~ comprises a surface of a common image bearing member.

14. (Currently Amended) The apparatus of claim 1, wherein the positioning device of each of the first and second optical devices allows the respective at least one rotatable lens being lenses to be rotatable so as to make deviations between the 5 respective line image images and the desired line smaller than 200 m um.

15. (Currently Amended) The apparatus of claim 14, wherein the deviations are made smaller than 120 m um.

16. (Currently Amended) The apparatus of claim 1, wherein the positioning device of each of the first and second optical device allows the respective at least one rotatable lens being lenses to be rotatable so as to make the respective line image images 5 to become a desired line.

17. (Currently Amended) The apparatus of claim 1, wherein each of the first and second images is comprises a line image and the characteristic of the image is the comprises a shape of the line image.

18. (Currently Amended) A scanning optical system for use in a color image forming apparatus comprising:

first and second scanning optical devices ~~scanning to scan~~
in a main scanning direction with a light beam so that each of
5 the devices ~~form~~ forms an image on an image forming surface,
wherein each of the first and second scanning optical
devices ~~comprising~~ comprises:

a light source which emits a light beam;
a deflector which deflects the light beam in the main
10 scanning direction;
a plurality of lenses, provided between the deflector
and the image forming surface, which focus the deflected light
beam on the image forming surface, wherein each of the lenses has
a length along the main scanning direction; and
15 a lens positioning device to position at least one lens
of the plurality of lenses ~~ratatably~~ rotatably around an axis
parallel to the length of the at least one lens to adjust the
characteristic of a scan line image in an adjustment process, and
wherein ~~the~~ a characteristic of ~~the~~ a first scan line image
20 and ~~the~~ a characteristic of ~~the~~ a second scan line image
substantially become the same [,] when the at least one of the
~~lens~~ lenses is rotated around the axis parallel to the length of
the lens.

19. (Currently Amended) The ~~apparatus~~ system of claim 18,
wherein the deflector includes a polygon mirror.

20. (Currently Amended) The ~~apparatus~~ system of claim 18, further comprising:

5 third and fourth scanning optical devices [[,] each ~~of the~~ ~~third and fourth scanning optical devices~~ also comprising ~~the~~ a light source, ~~the~~ a deflector, ~~the~~ a plurality of lenses, and ~~a~~ positioning device.

21. (Currently Amended) The ~~apparatus~~ system of claim 18, wherein one lens of the plurality of lenses ~~is a f~~ comprises an fθ lens.

22. (Currently Amended) The ~~apparatus~~ system of claim 18, wherein one lens of the plurality of lenses ~~is~~ comprises a cylindrical lens.

23. (Currently Amended) The ~~apparatus~~ system of claim 18, wherein the plurality of lenses ~~comprise a f~~ comprises an fθ lens and a cylindrical lens.

24. (Currently Amended) The ~~apparatus~~ system of claim 23, wherein the positioning device allows the cylindrical lens ~~being~~ to be rotatable around an axis parallel to the length of the cylindrical lens so as to scan a straight line on the image forming surface.

25. (Currently Amended) The ~~apparatus~~ system of Claim 23,
wherein the positioning device of each of the first scanning
device and the second scanning device comprises two mechanisms to
allow the ~~f~~ fθ lens and the cylindrical lens ~~being to be~~
5 rotatable around an axis parallel to the length of each lens
respectively so that the deflected light scans a straight line on
the image forming surface.

26. (Currently Amended) The ~~apparatus~~ system of claim 18,
wherein the at least one rotatable lens is positioned closest to
the image forming surface among the plurality of lenses.

27. (Currently Amended) The ~~apparatus~~ system of claim 18,
wherein the characteristic of the first scan line image and the
characteristic of the second scan line image is a straight line.

28. (Currently Amended) The ~~apparatus~~ system of claim 18,
further comprising:

an adjustment device ~~adjusting to adjust~~ at least one of the
first and second scanning optical devices so that the scanned
5 images formed by the first and second scanning optical devices
are superposed on the recording sheet.

29. (Currently Amended) The ~~apparatus~~ system of claim 20,
further comprising:

an adjustment device ~~adjusting to adjust~~ at least one of the
first, second, third and fourth scanning optical devices so that
5 the scanned images formed by the first, second, third and fourth
scanning optical devices are superposed on the recording sheet

30. (Currently Amended) The ~~apparatus~~ system of claim 18,
wherein the image forming surface ~~is~~ comprises a surface of a
common image bearing member.

31. (Currently Amended) The ~~apparatus~~ system of claim 18,
wherein the positioning device of each of the first and second
optical devices allows the respective at least one rotatable
~~lens being~~ lenses to be rotatable so as to make deviations
5 between the respective line image and the desired line smaller
than 200 ~~m~~ um.

32. (Currently Amended) The ~~apparatus~~ system of Claim 31,
wherein the deviations are made smaller than 120 ~~m~~ um.

33. (Currently Amended) The ~~apparatus~~ system of claim 18,
wherein the positioning device of each of the first and second
optical ~~device~~ devices allows the respective at least one

5 rotatable lens being lenses to be rotatable so as to make the
respective line image images to become a desired line.

34. (Currently Amended) The apparatus system of claim 18,
wherein each of the first and second images is comprises a line
image and the characteristic of the image is the comprises a
shape of the line image.

5 35. (Currently Amended) A color image forming apparatus
including a developing device for forming a color toner image,
comprising:

10 first and second scanning optical devices scanning to
scan in a main scanning direction with a light beam so that each
of the devices form forms an image on an image forming surface,
wherein each of the first and second scanning optical
devices comprising comprises:

 a light source which emits a light beam;

15 a deflector which deflects the light beam in the main
scanning direction;

 a plurality of lenses, provided between the deflector
and the image forming surface, which focus the deflected light
beam on the image forming surface, wherein each of the lenses has
a length along the main scanning direction; and

20 a lens positioning device to position at least one lens
of the plurality of lenses rotatably around an axis parallel to

the length of the at least one lens to adjust the characteristic of a scan line image in an adjustment process, and

25 wherein ~~the a~~ characteristic of ~~the a~~ first scan line image and ~~the a~~ characteristic of ~~the a~~ second scan line image substantially become the same [[,] when at least one of the ~~lens~~ lenses is rotated around the axis parallel to the length of the lens.

36. (Original) The apparatus of claim 35, wherein the deflector includes a polygon mirror.

37. (Currently Amended) The apparatus of claim 35, further comprising:

5 third and fourth scanning optical devices [,] each ~~of the~~ ~~third and fourth scanning optical devices~~ also comprising ~~the a~~ light source, ~~the a~~ deflector, ~~the a~~ plurality of lenses, and ~~a~~ positioning device.

38. (Currently Amended) The apparatus of claim 35, wherein one lens of the plurality of lenses ~~is a f~~ comprises an f θ lens.

39. (Currently Amended) The apparatus of claim 35, wherein one lens of the plurality of lenses ~~is~~ comprises a cylindrical lens.

40. (Currently Amended) The apparatus of claim 35, wherein the plurality of lenses ~~comprise a f~~ comprises an f_θ lens and a cylindrical lens.

41. (Currently Amended) The apparatus of claim 40, wherein the positioning device allows the cylindrical lens ~~being to be~~ rotatable around an axis parallel to the length of the cylindrical lens so as to scan a straight line on the image forming surface.

42. (Currently Amended) The apparatus of Claim 40, wherein the positioning device of each of the first scanning device and the second scanning device comprises two mechanisms to allow the ~~f f~~_θ lens and the cylindrical lens ~~being to be~~ rotatable around an axis parallel to the length of each lens respectively so that the deflected light scans a straight line on the image forming surface.

43. (Currently Amended) The apparatus of claim 35, wherein the at least one rotatable lens is positioned closest to the image forming surface among the plurality of lenses.

44. (Currently Amended) The apparatus of claim 35, wherein the characteristic of the first scan line image and the characteristic of the second scan line image is comprises a straight line.

45. (Currently Amended) The apparatus of claim 35, further comprising:

an adjustment device ~~adjusting to adjust~~ at least one of the first and second scanning optical devices so that the scanned 5 images formed by the first and second scanning optical devices are superposed on the recording sheet.

46. (Currently Amended) The apparatus of claim 37, further comprising:

an adjustment device ~~adjusting to adjust~~ at least one of the first, second, third and fourth scanning optical devices so that 5 the scanned images formed by the first, second, third and fourth scanning optical devices are superposed on the recording sheet.

47. (Currently Amended) The apparatus of claim 35, wherein the image forming surface is comprises a surface of a common image bearing member.

48. (Currently Amended) The apparatus of claim 35, wherein the positioning device of each of the first and second optical devices allows the respective at least one rotatable lens being lenses to be rotatable so as to make deviations between the 5 respective line image images and the desired line smaller than 200 m um.

49. (Currently Amended) The apparatus of Claim 48, wherein the deviations are made smaller than 120 m um.

50. (Currently Amended) The apparatus of claim 35, wherein the positioning device of each of the first and second optical device allows the respective at least one rotatable lens being lenses to be rotatable so as to make the respective line image images 5 to become a desired line.

51. (Currently Amended) The apparatus of claim 35, wherein each of the first and second images is comprises a line image and the characteristic of the image is the comprises a shape of the line image.

52. (New) A color image forming apparatus, comprising:
a first image forming device including a first scanning optical device to form a first image and a first developing

device to develop the first image into a first color toner image;
5 and

a second image forming device including a second scanning optical device to form a second image and a second developing device to develop the second image into a second color toner image;

10 wherein each of the first and second optical devices comprises:

a light source which emits a light beam;

a deflector which deflects the light beam so as to scan an image forming surface in a main scanning direction with the 15 light beam; and

a plurality of lenses provided between the deflector and the image forming surface to focus the deflected light on the image forming surface, wherein each of the plurality of lenses has a length along the main scanning direction;

20 wherein at least one lens of the plurality of lenses of the first optical device is rotatable around an axis parallel to the length of the at least one rotatable lens to adjust a characteristic of a first scan line image prior to fixing a position of the rotatable lens; and

25 wherein the characteristic of the first scan line image and a characteristic of a second scan line image become substantially the same when at least one of the lenses of the first optical

device is rotated around the axis parallel to the length of the lens.

53. (New) The apparatus of claim 52, wherein at least one lens of the plurality of lenses of the second optical device is rotatable around an axis parallel to the length of the at least one lens to adjust the characteristic of the second scan line image prior to fixing a position of the rotatable lens of the second optical device.

54. (New) The apparatus of claim 52, further comprising: third and fourth image forming devices including respective scanning optical devices and respective developing devices, wherein each of the third and fourth scanning optical devices also comprises a light source, a deflector and a plurality of lenses, and

10 wherein at least one lens of the plurality of lenses of the second optical device, the third optical device and the fourth optical device are rotatable around an axis parallel to the length of each lens to adjust a characteristic of the second scan line image, a third scan line image, and a fourth scan line image prior to fixing a position of each rotatable lens.

55. (New) The apparatus of claim 54, further comprising:
an adjustment device to adjust at least one of the first,
second, third and fourth scanning optical devices so that the
scanned images formed by the first, second, third and fourth
scanning optical devices are superposed on a recording sheet.

56. (New) The apparatus of claim 52, wherein the deflector
includes a polygon mirror.

57. (New) The apparatus of claim 52, wherein one lens of
the plurality of lenses comprises an $f\theta$ lens.

58. (New) The apparatus of claim 52, wherein one lens of
the plurality of lenses comprises a cylindrical lens.

59. (New) The apparatus of claim 52, wherein the plurality
of lenses comprises an $f\theta$ lens and a cylindrical lens.

60. (New) The apparatus of claim 59, wherein the
cylindrical lens of the first scanning optical device is
rotatable around an axis parallel to the length of the
cylindrical lens so as to scan a straight line on the image
5 forming surface.

61. (New) The apparatus of Claim 59, wherein the $f\theta$ lens and the cylindrical lens are rotatable around an axis parallel to the length of each lens respectively so that the deflected light scans a straight line on the image forming surface.

62. (New) The apparatus of claim 52, wherein the rotatable lens is positioned closest to the image forming surface among the plurality of lenses.

63. (New) The apparatus of claim 52, wherein the characteristic of the first scan line image and the characteristic of the second scan line image is a straight line.

64. (New) The apparatus of claim 52, further comprising:
an adjustment device to adjust at least one of the first and second scanning optical devices so that the scanned images formed by the first and second image forming devices are superposed on a
5 recording sheet.

65. (New) The apparatus of claim 52, wherein the image forming surface comprises a surface of a common image bearing member.

66. (New) The apparatus of claim 52, wherein the first scanning optical device forms the first image on a surface of a first image bearing member, and the second scanning optical device forms the second image on a surface of a second image bearing member.

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67. (New) The apparatus of claim 52, wherein a deviation between the first scan line image and a desired line image is smaller than 200 μm when at least one of the lenses of the first optical device is rotated around the axis parallel to the length of the lens.

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68. (New) The apparatus of claim 67, wherein the deviation is made smaller than 120 μm .

69. (New) The apparatus of claim 52, wherein the first scan line image becomes a desired line image when at least one of the lenses of the first optical device is rotated around the axis parallel to the length of the lens.

70. (New) The apparatus of claim 52, wherein each of the first and second images comprises a line image and the characteristic of the image comprises a shape of the line image.

71. (New) A scanning optical system for use in a color image forming apparatus comprising:

first and second scanning optical devices to scan in a main scanning direction with a light beam so that each of the devices
5 forms an image on an image forming surface;

wherein each of the first and second scanning optical devices comprises:

a light source which emits a light beam;

10 a deflector which deflects the light beam so as to scan an image forming surface in a main scanning direction; and

a plurality of lenses, provided between the deflector and the image forming surface, which focus the deflected light beam on the image forming surface, wherein each of the plurality of lenses has a length along the main scanning direction;

15 wherein at least one lens of the plurality of lenses of the first optical device is rotatable around an axis parallel to the length of the one lens to adjust a characteristic of a first scan line image prior to fixing a position of the rotatable lens; and

20 wherein the characteristic of the first scan line image and a characteristic of a second scan line image become substantially the same when at least one of the lenses of the first optical device is rotated around the axis parallel to the length of the lens.

72. (New) The system of claim 71, wherein at least one lens of the plurality of lenses of the second optical device is rotatable around an axis parallel to the length of the at least one lens to adjust a characteristic of the second scan line image 5 prior to fixing a position of the rotatable lens.

73. (New) The system of claim 71, further comprising:
third and fourth image forming devices including respective scanning optical devices and respective developing devices,
wherein each of the third and fourth scanning optical 5 devices also comprises a light source, a deflector and a plurality of lenses, and

wherein at least one lens of the plurality of lenses of the second optical device, the third optical device and the fourth optical device are rotatable around an axis parallel to the 10 length of each lens to adjust a characteristic of the second scan line image, a third scan line image, and a fourth scan line image prior to fixing a position of each rotatable lens.

74. (New) The system of claim 73, further comprising:
an adjustment device to adjust at least one of the first, second, third and fourth scanning optical devices so that the 5 scanned images formed by the first, second, third and fourth scanning optical devices are superposed on a recording sheet.

75. (New) The system of claim 71, wherein the deflector includes a polygon mirror.

76. (New) The system of claim 71, wherein one lens of the plurality of lenses comprises an $f\theta$ lens.

77. (New) The system of claim 71, wherein one lens of the plurality of lenses comprises a cylindrical lens.

78. (New) The system of claim 71, wherein the plurality of lenses comprises an $f\theta$ lens and a cylindrical lens.

79. (New) The system of claim 78, wherein the cylindrical lens of the first scanning optical device is rotatable around an axis parallel to the length of the cylindrical lens so as to scan a straight line on the image forming surface.

80. (New) The system of Claim 78, wherein the $f\theta$ lens and the cylindrical lens are rotatable around an axis parallel to the length of each lens respectively so that the deflected light scans a straight line on the image forming surface.

81. (New) The system of claim 71, wherein the rotatable lens is positioned closest to the image forming surface among the plurality of lenses.

82. (New) The system of claim 71, wherein the characteristic of the first scan line image and the characteristic of the second scan line image is a straight line.

83. (New) The system of claim 71, further comprising:
an adjustment device to adjust at least one of the first and second scanning optical devices so that the scanned images formed by the first and second image forming devices are superposed on a
5 recording sheet.

84. (New) The system of claim 71, wherein the image forming surface comprises a surface of a common image bearing member.

85. (New) The system of claim 71, wherein the first scanning optical device forms the first image on a surface of a first image bearing member, and the second scanning optical device forms the second image on a surface of a second image
5 bearing member.

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86. (New) The system of claim 71, wherein a deviation between the first scan line image and a desired line image is smaller than 200 μm when at least one of the lenses of the first optical device is rotated around the axis parallel to the length of the lens.

87. (New) The system of claim 86, wherein the deviation is made smaller than 120 μm .

88. (New) The system of claim 71, wherein the first scan line image becomes a desired line image when at least one of the lenses of the first optical device is rotated around the axis parallel to the length of the lens.

89. (New) The system of claim 71, wherein each of the first and second images comprises a line image and the characteristic of the image comprises a shape of the line image.

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90. (New) A color image forming apparatus including a developing device for forming a color toner image, comprising:

first and second scanning optical devices to scan in a main scanning direction with a light beam so that each of the devices forms an image on an image forming surface,

wherein each of the first and second scanning optical devices comprises:

10 a light source which emits a light beam;
 a deflector which deflects the light beam so as to scan
 an image forming surface in a main scanning direction; and
 a plurality of lenses, provided between the deflector
 and the image forming surface, which focus the deflected light
 beam on the image forming surface, wherein each of the plurality
 of lenses has a length along the main scanning direction;
15 wherein at least one lens of the plurality of lenses of the
 first optical device is rotatable around an axis parallel to the
 length of the one lens to adjust a characteristic of a first scan
 line image prior to fixing a position of the rotatable lens; and
 wherein the characteristic of the first scan line image and
20 a characteristic of a second scan line image become substantially
 the same when at least one of the lenses of the first optical
 device is rotated around the axis parallel to the length of the
 lens.

5 91. (New) The apparatus of claim 90, wherein at least one
 lens of the plurality of lenses of the second optical device is
 rotatable around an axis parallel to the length of the at least
 one lens to adjust a characteristic of the second scan line image
 prior to fixing a position of the rotatable lens.

92. (New) The apparatus of claim 90, further comprising:

third and fourth image forming devices including respective scanning optical devices and respective developing devices,

5 wherein each of the third and fourth scanning optical devices also comprises a light source, a deflector and a plurality of lenses, and

wherein at least one lens of the plurality of lenses of the second optical device, the third optical device and the fourth optical device are rotatable around an axis parallel to the 10 length of each lens to adjust a characteristic of the second scan line image, a third scan line image, and a fourth scan line image prior to fixing a position of each rotatable lens.

93. (New) The apparatus of claim 92, further comprising:

an adjustment device to adjust at least one of the first, second, third and fourth scanning optical devices so that the scanned images formed by the first, second, third and fourth 5 scanning optical devices are superposed on a recording sheet.

94. (New) The apparatus of claim 90, wherein the deflector includes a polygon mirror.

95. (New) The apparatus of claim 90, wherein one lens of the plurality of lenses comprises an $f\theta$ lens.

96. (New) The apparatus of claim 90, wherein one lens of the plurality of lenses comprises a cylindrical lens.

97. (New) The apparatus of claim 90, wherein the plurality of lenses comprises an $f\theta$ lens and a cylindrical lens.

98. (New) The apparatus of claim 97, wherein the cylindrical lens of the first scanning optical device is rotatable around an axis parallel to the length of the cylindrical lens so as to scan a straight line on the image forming surface.

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99. (New) The apparatus of Claim 97, wherein the $f\theta$ lens and the cylindrical lens are rotatable around an axis parallel to the length of each lens respectively so that the deflected light scans a straight line on the image forming surface.

100. (New) The apparatus of claim 90, wherein the rotatable lens is positioned closest to the image forming surface among the plurality of lenses.

101. (New) The apparatus of claim 90, wherein the characteristic of the first scan line image and the characteristic of the second scan line image is a straight line.

102. (New) The apparatus of claim 90, further comprising:
an adjustment device to adjust at least one of the first and
second scanning optical devices so that the scanned images formed
by the first and second image forming devices are superposed on a
recording sheet.

103. (New) The apparatus of claim 90, wherein the image
forming surface comprises a surface of a common image bearing
member.

104. (New) The apparatus of claim 90, wherein the first
scanning optical device forms the first image on a surface of a
first image bearing member, and the second scanning optical
device forms the second image on a surface of a second image
bearing member.

105. (New) The apparatus of claim 90, wherein a deviation
between the first scan line image and a desired line image is
smaller than 200 μm when at least one of the lenses of the first
optical device is rotated around the axis parallel to the length
5 of the lens.

106. (New) The apparatus of claim 105, wherein the
deviation is made smaller than 120 μm .

107. (New) The apparatus of claim 90, wherein the first scan line image becomes a desired line image when at least one of the lenses of the first optical device is rotated around the axis parallel to the length of the lens.

108. (New) The apparatus of claim 90, wherein each of the first and second images comprises a line image and the characteristic of the image comprises a shape of the line image.